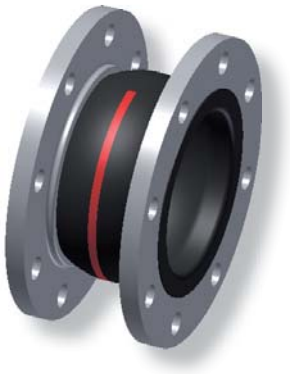
WILLBRANDT **Rubber Expansion Joint Type 55**

DN 20 - DN 1000

Type 55 is a low-corrugated, highly elastic rubber expansion joint. Its low corrugation helps to achieve very low flow resistance. It reduces up to 70 % of the incoming energy. It is also characterised by very high movement absorption in all directions and its variety of rubber qualities, which means that a suitable rubber compound is available for almost every application (see material descriptions on the following pages).

Type 55 is used in building technology, plant engineering, water and wastewater technology, engine construction, shipbuilding and in solar and wind plant engineering. It is especially used to absorb expansion and vibration and to insulate sound.



Bellow design	Low-corrugated rubber bellow with reinforcement and shaped sealing bead with core ring, self-sealing (no additional seals required). Suitable for accommodating swiveling flanges.	**Flange version**	Both sides with swiveling flange made of galvanized steel, with clearance holes, drilled according to DIN PN 10 (standard). Other materials and dimensions are possible.
Approvals/Conformity	Similar to DIN 4809 / TÜV approved, drinking water, shipbuilding approval FDA and EG 1935/2004 conform		

Specifications for DN 20 - DN 400

Bellow		Bellow design			Permissible operating data									Surface resistance Ro	
Colour-code	Colour marking	Core (inner)	Rein-forcement	Cover (outer)	°C	bar	°C	bar	°C	bar	°C	bar	Short-term °C	Core Ohm x cm	Cover Ohm x cm
red Sp		EPDM	PEEK	EPDM	-40	10	70	16	100	10	130	8	150	4 x 10^3	4 x 10^3
red		IIR	Polyamide	EPDM	-40	10	50	16	70	12	100	10	120	7 x 10^6	1 x 10^3
yellow		NBR	Polyamide	CR	-20	10	50	16	70	12	90	10	100	2 x 10^2	1 x 10^3
green		CSM	Polyamide	CSM	-20	10	50	16	70	12	100	10	110	7 x 10^9	7 x 10^9
yellow St		NBR	Steel cord	CR	-20	10	60	16	70	12	90	10	100	2 x 10^2	5 x 10^{10}

- Bursting pressure for DN 20 - 400: > 48 bar
- DN 300 max. 10 bar working pressure / Bursting pressure >30 bar

Specifications for DN 450 - DN 1000

Bellow		Bellow design			Permissible operating data									Surface resistance Ro	
Colour-code	Colour marking	Core (inner)	Rein-forcement	Cover (outer)	°C	bar	°C	bar	°C	bar	°C	bar	Short-term °C	Core Ohm x cm	Cover Ohm x cm
red Sp		EPDM	PEEK	EPDM	-40	8	70	10	100	7.5	130	6	150	4 x 10^3	4 x 10^3
red		IIR	Polyamide	EPDM	-40	8	50	10	70	8.0	100	6	120	7 x 10^6	1 x 10^3
yellow		NBR	Polyamide	CR	-20	8	50	10	70	8.0	90	6	100	2 x 10^2	1 x 10^3
green		CSM	Polyamide	CSM	-20	8	50	10	70	8.0	100	6	110	7 x 10^9	7 x 10^9

- Bursting pressure for DN 450 - 1000: > 30 bar
- The inner core of type 55 red DN 500 and DN 600 is made of EPDM

Important information

For aggressive media, please see the resistance table (can be requested separately).
The bellows should not be painted or insulated. Please refer to the installation instructions.
++++ We will be happy to send you further information on the individual types and designs. ++++

WILLBRANDT **Rubber Expansion Joint Type 55**

Vacuum resistance

- DN 20 to 50 vacuum-resistant without additional accessories
- DN 65 to 250 up to -200 mbar without additional accessories
- DN 300 to 1000 not vacuum-resistant without additional accessories
- DN 65 to 1000 vacuum-resistant with vacuum supporting spiral/ring

Accessories

- Guide sleeves
- Potential equalisation
- Flame-resistant protective covers
- Dust and splash protection covers
- Earth cover / sun protection hoods
- Segment tie rods

Application

Type 55 red Sp
For heating installations according to DIN 4809. For many years of operation under constant loading with hot water and heating water at 100 °C/110 °C at 10 bar/6 bar operating pressure. Electrically conductive surface. Not suitable for media with additives containing oil.

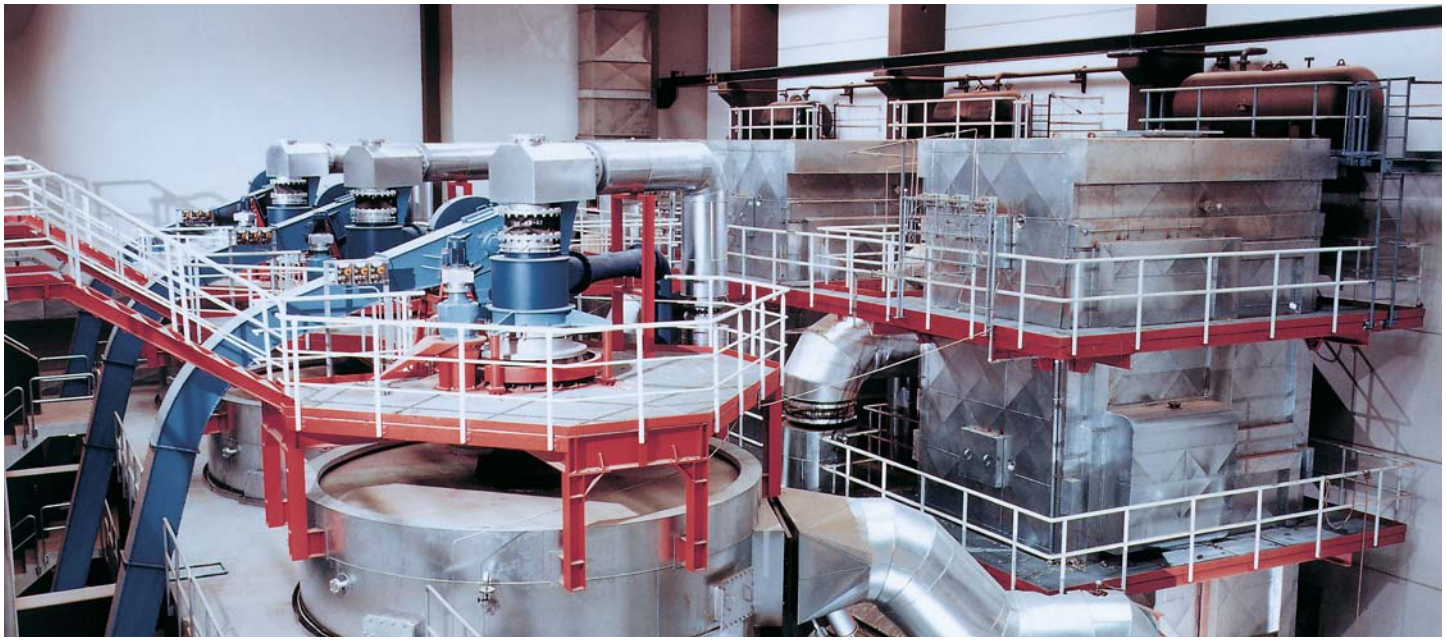
Type 55 red
For drinking water, hot water, sea water, cooling water with chemical additives for treating water, saline solutions, weak acids and weak alkaline solutions. Electrically dissipative inner surface and electrically conductive outer surface. Not suitable for oil products or cooling water with additives containing oil.

Type 55 yellow
For oils, lubricants, fuels, gases, city and natural gas (not liquefied) and DIN EN fuels with an aromatic content up to 50 %. Electrically conductive.

Type 55 green
For chemicals, aggressive chemical wastewater and compressor air containing oil. Electrically insulating.

Type 55 yellow St
Like Type 50 yellow with additional flame-resistance for up to 30 minutes at 800 °C. Electrically conductive inner surface, electrically insulating outer surface.

Note!
Detailed material descriptions on pages 5 - 7.

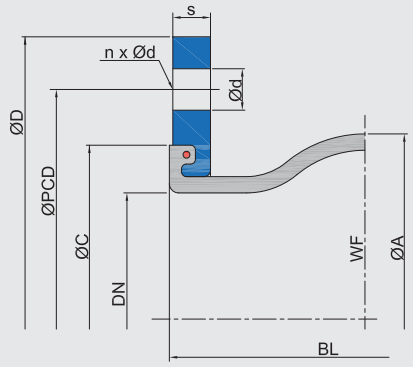


WILLBRANDT **Rubber Expansion Joint Type 55**

Design A - without tie rods

Can be used for movement absorption in any direction (for combined movements, see the movement diagram in the technical appendix), noise and vibration insulation.

The expansion joint's reaction force must be absorbed via suitable piping.



axial -

axial +

lateral ±

angular ±

Dimensions for Design A

DN	Length	Bellow		Flange PN 10*2						Movement absorption				Weight
	BL	ØA	WF*1	ØD	ØPCD	Ød	n	s	ØC	axial +	axial -	lateral ±	angular ±	
	mm	mm	mm²	mm	mm	mm		mm	mm	mm	mm	mm	∠°	kg
20	*3**125**	81	1700	105	75	12	4	14	66	30	30	30	30	1.5
25	*3**125**	81	1700	115	85	14	4	14	66	30	30	30	30	1.9
32	*3**125**	81	1700	140	100	18	4	15	66	30	30	30	30	3.1
40	*3**125**	86	1800	150	110	18	4	15	74	30	30	30	30	3.5
50	*3**125**	96	3200	165	125	18	4	16	86	30	30	30	30	3.7
65	*3**125**	111	5300	185	145	18	8	16	106	30	30	30	30	5.3
80	**150**	122	8500	200	160	18	8	18	118	30	30	30	30	6.9
100	**150**	142	12800	220	180	18	8	18	138	30	30	30	20	8.0
125	**150**	168	18700	250	210	18	8	18	166	30	30	30	20	9.8
150	**150**	192	25900	285	240	22	8	18	192	30	30	30	20	13.2
200	**175**	252	41000	340	295	22	8	20	252	30	30	30	12	17.9
250	**175**	302	59600	395	350	22	12	20	304	30	30	30	12	23.8
300	**200**	354	82200	445	400	22	12	22	354	30	30	30	12	25.0
350	**200**	420	117600	505	460	22	16	24	412	30	50	30	8	38.3
400	**200**	480	154700	565	515	26	16	25	470	30	50	30	8	38.0
450	**250**	530	204200	615	565	26	20	25	520	30	50	30	8	53.7
500	**250**	580	227900	670	620	26	20	30	570	20	40	30	6	61.0
600	**250**	680	311500	780	725	30	20	30	675	20	40	30	6	79.3
700	***4275**	800	434200	895	840	30	24	35	780	30	50	30	8	127.3
800	**250**	880	527400	1015	950	33	24	40	887	30	50	30	6	161.0
900	**300**	1038	737900	1115	1050	33	28	40	987	30	50	30	5	196.7
1000	**300**	1138	889400	1230	1160	36	28	40	1087	30	50	30	5	234.5

*1 WF = effective area
*2 Other standards/dimensions possible.
*3 Building length 130 mm
*4 Building length 260 mm

Permissible degree of utilisation for movement areas:
- up to 50 °C: Utilisation ~ 100 %
- up to 70 °C: Utilisation ~ 75 %
- up to 90 °C: Utilisation ~ 60 %

Important information

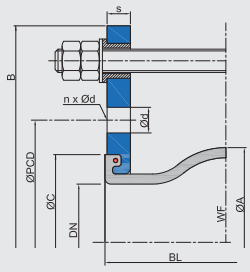
Please note the appropriate fixed point constructions and plain bearings in your piping system! You can find information on this in our installation instructions.
For information on the tie rods, please see the technical appendix (p. 89 - 92)!
++++ We will be happy to send you further information on the individual types and designs. ++++

WILLBRANDT **Rubber Expansion Joint Type 55**

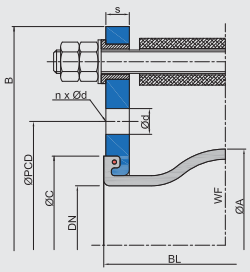
Length limiters

There is a selection of various length limiters / tie rods to absorb the reaction force and to protect the bellow from overstretching or collapsing:

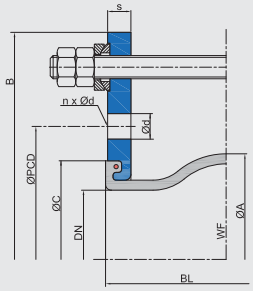
Design B*
with tie rods



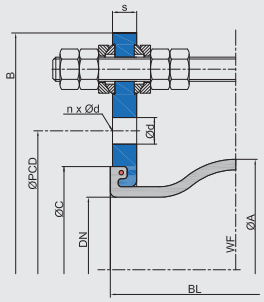
Design C*
with tie rod/thrust limiters



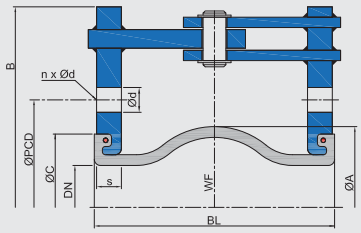
Design E
with tie rods and spherical washers/conical sockets



Design M
with tie rods/thrust limiters with spherical washers/conical sockets



Design F
with hinge

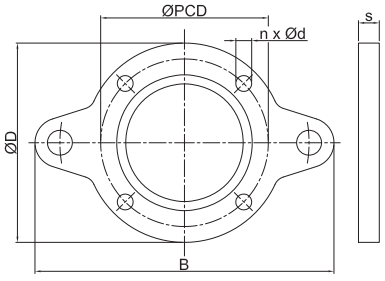


*Note: For Designs B and C
the lateral movement absorption is reduced by around 50 %.

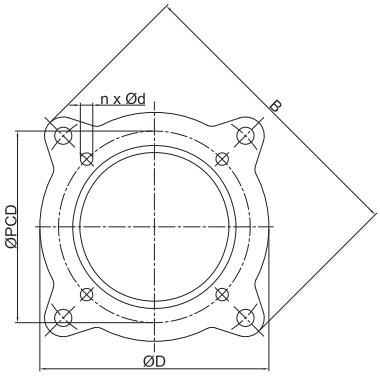
Flange dimensions for designs with tie rods

DN	Length BL	Flange PN 10 (example dimensions) B	ØD	ØPCD	Ød	n	s	ØC
	mm	mm	mm	mm	mm		mm	mm
20	*1**125**	189	105	75	12	4	14	66
25	*1**125**	205	115	85	14	4	14	66
32	*1**125**	230	140	100	18	4	15	66
40	*1**125**	240	150	110	18	4	15	74
50	*1**125**	255	165	125	18	4	16	86
65	*1**125**	275	185	145	18	8	16	106
80	**150**	290	200	160	18	8	18	118
100	**150**	310	220	180	18	8	18	138
125	**150**	340	250	210	18	8	18	166
150	**150**	375	285	240	22	8	18	192
200	**175**	440	340	295	22	8	20	252
250	**175**	509	395	350	22	12	20	304
300	**200**	559	445	400	22	12	22	354
350	**200**	619	505	460	22	16	24	412
400	**200**	700	565	515	26	16	25	470
450	**250**	760	615	565	26	20	30	520
500	**250**	810	670	620	26	20	30	570
600	**250**	930	780	725	30	20	30	675
700	*2**275**	1045	895	840	30	24	35	780
800	**250**	1175	1015	950	33	24	40	887
900	**300**	1285	1115	1050	33	28	40	987
1000	**300**	1400	1230	1160	36	28	40	1087

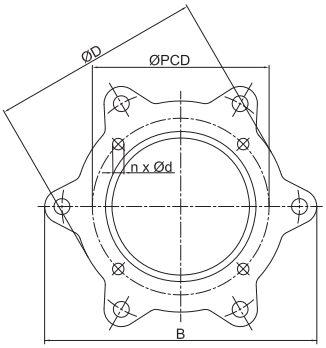
*1 Building length 130 mm
*2 Building length 260 mm



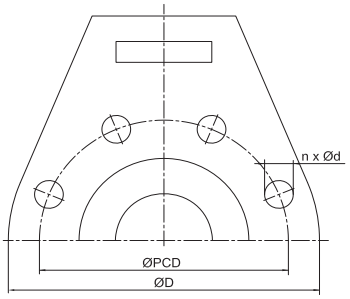
DN 32 - 200



DN 250 - 900



DN 1000



DN 50 - 1000 (Design F)

WILLBRANDT **Rubber Expansion Joint Type 55**

Axial stiffness rates

DN	Length BL mm	Stiffness rates (average value from full way) 0 bar N/mm	1 bar N/mm	2.5 bar N/mm	3 bar N/mm	4 bar N/mm	5 bar N/mm	6 bar N/mm	8 bar N/mm	10 bar N/mm	12 bar N/mm	16 bar N/mm
20	*1**125**	31	56	68	88	128	160	192	192	243	252	270
25	*1**125**	31	56	68	88	128	160	192	192	243	252	270
32	*1**125**	31	56	68	88	128	160	192	192	243	252	270
40	*1**125**	30	54	66	85	124	155	186	186	236	244	261
50	*1**125**	25	42	51	67	98	116	134	134	173	179	192
65	*1**125**	24	43	53	69	100	125	150	150	190	197	211
80	**150**	28	48	58	73	104	126	148	148	185	192	205
100	**150**	35	59	71	86	116	161	206	206	274	284	304
125	**150**	36	59	71	93	137	176	214	214	282	292	313
150	**150**	49	84	102	131	189	241	293	293	390	404	433
200	**175**	100	153	180	242	365	467	568	568	735	762	816
250	**175**	105	173	207	267	388	499	609	609	778	807	864
300	**200**	123	206	248	315	448	553	658	659	883	915	980
350	**200**	105	153	177	234	349	458	567	567	753	781	836
400	**200**	154	225	261	346	516	526	535	536	1,090	1,130	1,210
450	**250**	167	269	320	407	581	742	903	904	1,162	1,205	1,290
500	**250**	196	316	376	479	686	873	1,060	1,061	1,364	1,414	1,514
600	**250**	208	264	292	425	692	908	1,123	1,124	1,441	1,494	1,600
700	*2**275**	140	179	198	372	721	718	714	715	954	636	-
800	**250**	180	240	270	378	594	785	975	976	1,258	839	-
900	**300**	200	320	380	483	690	885	1,080	1,081	1,395	930	-
1000	**300**	225	355	420	527	742	995	1,248	1,249	1,568	1,045	-

*1 Building length 130 mm
*2 Building length 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use of different materials and manufacturing processes.

Lateral stiffness rates

DN	Length BL mm	Stiffness rates (average value from full way) 0 bar N/mm	1 bar N/mm	2.5 bar N/mm	3 bar N/mm	4 bar N/mm	5 bar N/mm	6 bar N/mm	8 bar N/mm	10 bar N/mm	12 bar N/mm	16 bar N/mm
20	*1**125**	64	105	125	145	184	212	240	249	259	260	264
25	*1**125**	64	105	125	145	184	212	240	249	259	260	264
32	*1**125**	64	105	125	145	184	212	240	249	259	260	264
40	*1**125**	62	101	121	140	178	205	233	242	251	252	256
50	*1**125**	50	60	65	70	80	93	105	124	142	143	145
65	*1**125**	40	65	78	90	115	133	150	156	162	163	165
80	**150**	34	59	72	92	132	141	151	158	165	166	168
100	**150**	53	74	85	102	138	150	162	172	181	183	185
125	**150**	97	162	194	214	253	269	284	324	364	367	372
150	**150**	116	206	251	267	299	326	354	398	441	444	450
200	**175**	304	555	680	716	787	840	893	1,009	1,124	1,132	1,147
250	**175**	356	624	758	826	961	1,032	1,103	1,233	1,363	1,373	1,391
300	**200**	368	647	786	858	1,003	1,072	1,142	1,280	1,419	1,428	1,448
350	**200**	305	508	610	661	762	819	875	976	1,076	1,083	1,098
400	**200**	338	541	642	700	817	882	946	1,061	1,175	1,183	1,199
450	**250**	342	540	639	700	821	896	971	1,074	1,176	1,184	1,200
500	**250**	426	687	818	895	1,048	1,126	1,204	1,335	1,465	1,475	1,495
600	**250**	456	708	834	910	1,062	1,179	1,295	1,425	1,554	1,565	1,586
700	*2**275**	516	798	939	1,023	1,191	1,320	1,449	1,594	1,740	1,160	-
800	**250**	558	826	960	992	1,055	1,306	1,557	1,640	1,723	1,149	-
900	**300**	800	1,253	1,480	1,648	1,984	2,116	2,248	2,378	2,509	1,673	-
1000	**300**	960	1,536	1,824	2,003	2,361	2,549	2,736	2,826	2,916	1,944	-

*1 Building length 130 mm
*2 Building length 260 mm

Warning: Deviations (+/-25 %) in the stiffness rates may occur due to use of different materials and manufacturing processes.

WILLBRANDT **Rubber Expansion Joint Type 55**

Angular stiffness torque

DN	Overall length BL mm	Stiffness torque (average value from full way) 0 bar Nm/°	2.5 bar Nm/°	4 bar Nm/°	6 bar Nm/°	10 bar Nm/°	16 bar Nm/°
20	*1**125**	0.2	0.5	0.9	1.3	1.7	1.9
25	*1**125**	0.2	0.5	0.9	1.3	1.7	1.9
32	*1**125**	0.2	0.5	0.9	1.3	1.7	1.9
40	*1**125**	0.3	0.6	1.1	1.6	2.0	2.3
50	*1**125**	0.3	0.6	1.1	1.6	2.0	2.2
65	*1**125**	0.4	0.9	1.7	2.5	3.2	3.6
80	**150**	0.6	1.3	2.3	3.3	4.1	4.6
100	**150**	1.0	2.0	4.0	7.0	9.0	10.0
125	**150**	2.0	3.0	6.0	10.0	13.0	15.0
150	**150**	3.0	7.0	12.0	19.0	25.0	28.0
200	**175**	11.0	20.0	41.0	63.0	82.0	91.0
250	**175**	18.0	35.0	65.0	102.0	130.0	144.0
300	**200**	29.0	58.0	105.0	154.0	206.0	229.0
350	**200**	34.0	57.0	113.0	183.0	244.0	270.0
400	**200**	65.0	110.0	218.0	226.0	460.0	511.0
450	**250**	114.0	218.0	396.0	615.0	792.0	676.0
500	**250**	162.0	311.0	568.0	877.0	1128.0	1069.0
600	**250**	241.0	340.0	804.0	1305.0	1674.0	1588.0
700	*2**275**	167.0	237.0	861.0	853.0	1140.0	1265.0
800	**250**	277.0	416.0	914.0	1501.0	1937.0	2150.0
900	**300**	386.0	733.0	1330.0	2082.0	2689.0	2985.0
1000	**300**	531.0	991.0	1751.0	2945.0	3700.0	4107.0

*1 Building length 130 mm
*2 Building length 260 mm

Warning: Deviations (+/-25 %) in the stiffness torque may occur due to use of different materials and manufacturing processes.

Frictional force

DN	Overall length mm	for Designs E and M Frictional force N/bar	for Design F Frictional moment Nm/bar
20	*1**125**	7	0.2
25	*1**125**	7	0.2
32	*1**125**	7	0.2
40	*1**125**	8	0.2
50	*1**125**	12	0.3
65	*1**125**	20	0.5
80	**150**	30	1.0
100	**150**	44	1.4
125	**150**	65	2.1
150	**150**	102	4.4
200	**175**	124	6.2
250	**175**	180	11.2
300	**200**	218	15.4
350	**200**	120	17.0
400	**200**	160	22.9
450	**250**	226	40.5
500	**250**	212	63.5
600	**250**	507	138.5
700	*2**275**	602	180.9
800	**250**	814	326.2
900	**300**	921	402.4
1000	**300**	1130	617.3

*1 Building length 130 mm
*2 Building length 260 mm

Warning: Deviations (+/-25 %) in the frictional force may occur due to use of different materials and manufacturing processes.

WILLBRANDT **Rubber Expansion Joint Type 55 PTFE**

DN 25 - DN 500

Type 55 PTFE is a low-corrugated, PTFE-lined rubber expansion joint. Its shallow corrugation helps to achieve very low flow resistance. The PTFE lining gives the expansion joint high chemical resistance or an anti-adhesive property.

The PTFE lining can be used for any rubber compound on Type 55. It is however necessary to ensure that the selected rubber compound achieves the highest possible media resistance, as this is the only way to achieve optimum service life.

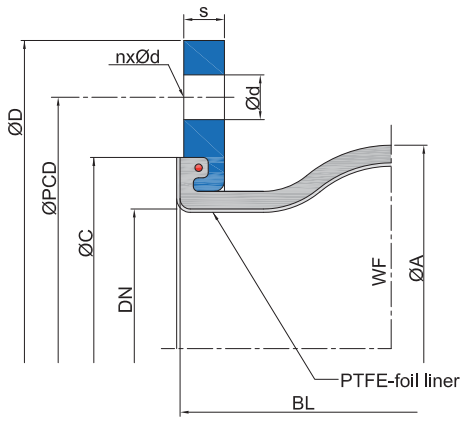
Dimensions for Design A

DN	Overall length BL	Bellow		Flange PN 10*2						Movement absorption			
		ØA	WF*1	ØD	ØPCD	Ød	n	s	ØC	axial +	axial -	lateral ±	angular ±
	mm	mm	mm²	mm	mm	mm		mm	mm	mm	mm	mm	
25	*3**125**	81	1700	115	85	14	4	14	65	15	15	15	15.0
32	*3**125**	81	1700	140	100	18	4	15	65	15	15	15	15.0
40	*3**125**	86	1800	150	110	18	4	15	74	15	15	15	15.0
50	*3**125**	96	3200	165	125	18	4	16	86	15	15	15	15.0
65	*3**125**	111	5300	185	145	18	8	16	105	15	15	15	15.0
80	**150**	122	8500	200	160	18	8	18	118	15	15	15	15.0
100	**150**	142	12800	220	180	18	8	18	137	15	15	15	10.0
125	**150**	168	18700	250	210	18	8	18	166	15	15	15	10.0
150	**150**	192	25900	285	240	22	8	20	192	15	15	15	10.0
200	**175**	252	41000	340	295	22	8	20	252	15	15	15	6.0
250	**175**	302	59600	395	350	22	12	20	304	15	15	15	6.0
300	**200**	354	82200	445	400	22	12	20	354	15	15	15	6.0
350	**200**	420	117600	505	460	22	16	24	412	15	15	15	4.0
400	**200**	480	154700	565	515	26	16	25	470	15	15	15	4.0
450	**250**	530	204200	615	565	26	20	25	520	15	15	15	4.0
500	**250**	580	227900	670	620	26	20	30	570	15	15	15	4.0

*1 WF = Building length 130 mm
*2 WF = effective area
*3 Other standards/dimensions possible.

Permissible degree of utilisation for movement areas:
- up to 50 °C: Utilisation ~ 100 %
- up to 70 °C: Utilisation ~ 75 %
- up to 90 °C: Utilisation ~ 60 %

Pressure resistance	Max. 6 bar operating pressure with polyamide cord reinforcement, max. 9 bar operating pressure with aramid or steel cord reinforcement.
Conformity	FDA and EG 1935/2004
Vacuum resistance	Only limited suitable for vacuum operation. A PTFE vacuum supporting ring, which allows full vacuum for small nominal diameters, can be used from DN 50. The PTFE supporting ring can only be used up to 50 °C. DN 25, DN 32, DN 40 and DN 350 expansion joints are not suitable for vacuum operation.



Important information

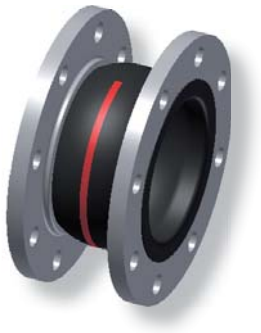
For aggressive media, please see the resistance table (can be requested separately).
The bellows should not be painted or insulated. Please refer to the installation instructions.
++++ We will be happy to send you further information on the individual types and designs. ++++

WILLBRANDT **Rubber Expansion Joint for Shock Design Type 55 SO**

DN 20 - DN 300

Type 55 SO is a low-corrugated, highly elastic rubber expansion joint. Its low corrugation helps to achieve very low flow resistance. It has been specially designed for the shipbuilding industry and is characterised by its high level of shock absorption.

Type 55 SO is primarily used in marine shipbuilding to absorb expansion and vibration as well as to insulate sound and protect the connected fans in the event of shock.



Bellow design	Low-corrugated rubber bellow with reinforcement and shaped sealing bead with core ring, self-sealing (no additional seals required). Suitable for accommodating swiveling flanges.
Vacuum resistance	- DN 20 to 50 vacuum-resistant without additional accessories - DN 65 to 250 up to -200 mbar without additional accessories - DN 300 to 1000 not vacuum-resistant without additional accessories - DN 65 to 1000 with vacuum supporting spiral/ring vacuum-resistant
Flange version	Both sides with swiveling flange made of galvanized steel, with clearance holes, drilled according to DIN PN 10 (standard). Other materials and dimensions are possible.
Approvals	Drinking water and shipbuilding approval
Accessories	- Guide sleeves - Potential equalisation - Flame-resistant protective covers - Dust and splash protection covers - Earth cover / sun protection hoods - Segment tie rods

Specifications for DN 20 - DN 300

Bellow		Bellow design			Permissible operating data									Surface resistance Ro	
Colour code	Colour marking	Core (inner)	Rein-forcement	Cover (outer)	°C	bar	°C	bar	°C	bar	°C	bar	Short-term °C	Core Ohm x cm	Cover Ohm x cm
red		IIR	Polyamide	EPDM	-40	10	50	16	70	12	100	10	120	7 x 10^6	1 x 10^3
yellow		NBR	Polyamide	CR	-20	10	50	16	70	12	90	10	100	2 x 10^2	1 x 10^3

- Bursting pressure for DN 20 - DN 300: > 48 bar
- DN 250 and DN 300 max. 10 bar working pressure

Use

Type 55 SO red
For drinking water, hot water, sea water, cooling water with chemical additives for treating water, saline solutions, weak acids and weak alkaline solutions. Electrically dissipative inner surface and electrically conductive outer surface. Not suitable for oil products or cooling water with additives containing oil.

Type 55 SO yellow
For oils, lubricants, fuels, gases, city and natural gas (not liquefied) and DIN EN fuels with an aromatic content up to 50 %. Electrically conductive.

Note!
Detailed material descriptions on pages 5 - 7.

Important information

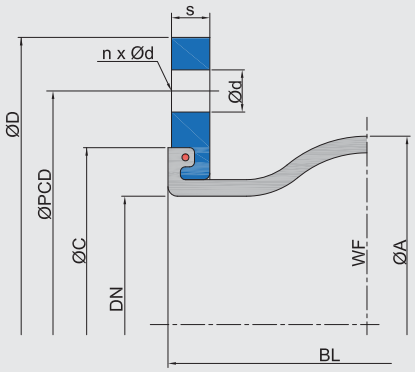
For aggressive media, please see the resistance table (can be requested separately).
The bellows should not be painted or insulated. Please refer to the installation instructions.
++++ We will be happy to send you further information on the individual types and designs. ++++

WILLBRANDT **Rubber Expansion Joint for Shock Design Type 55 SO**

Design A - without tie rods

Can be used for movement absorption in any direction (for combined movements, see the movement diagram in the technical appendix), noise and vibration insulation.

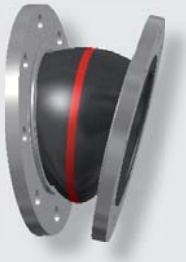
The expansion joints reaction force must be absorbed via suitable piping.



axial -

axial +

lateral ±



angular ±

Dimensions

DN	Length	Bellow		Flange PN 10*2						Movement absorption				Weight
	BL	ØA	WF*1	ØD	ØPCD	Ød	n	s	ØC	axial +	axial -	lateral ±	angular ±	
	mm	mm	mm²	mm	mm	mm		mm	mm	mm	mm	mm	∠°	kg
20	**160**	81	1700	105	75	12	4	14	66	30	30	30	30	1.5
25	**160**	81	1700	115	85	14	4	14	66	30	30	30	30	1.9
32	**160**	81	1700	140	100	18	4	15	66	30	30	30	30	3.1
40	**160**	86	1800	150	110	18	4	15	74	30	30	30	30	3.5
50	**160**	96	3200	165	125	18	4	16	86	30	30	30	30	3.7
65	**160**	111	5300	185	145	18	8	16	106	30	30	30	30	5.3
80	**160**	122	8500	200	160	18	8	18	118	30	30	30	30	6.8
100	**160**	142	12800	220	180	18	8	18	138	30	30	30	20	7.9
125	**160**	168	18700	250	210	18	8	18	166	30	30	30	20	9.6
150	**160**	192	25900	285	240	22	8	18	192	30	30	30	20	12.9
200	**160**	252	41000	340	295	22	8	20	252	30	30	30	12	16.2
250	**200**	302	59600	395	350	22	12	20	304	30	30	30	12	21.5
300	**200**	354	82200	445	400	22	12	22	354	30	30	30	12	24.5

*1 WF = effective area
*2 Other standards/dimensions possible.

Shock absorption in any direction ±50 mm.

Permissible degree of utilisation for movement areas:
up to 50 °C: Utilisation ~ 100 %
up to 70 °C: Utilisation ~ 75 %
up to 90 °C: Utilisation ~ 60 %

Important information

Please note the appropriate fixed point constructions and plain bearings in your piping system!
For more information please refer to our installation instructions.
For information on the tie rods, please see the technical appendix (p. 89 - 92)!
We will be happy to send you further information on the individual types and designs. ++++